

## Abstract

In the transverse type induction heating apparatus in which a material 1 to be rolled is heated by inductors 2 and 3 to which electric power is supplied from an AC power source 4, iron core widths of the inductors 2 and 3 in a plate width direction of the material 1 to be rolled are made smaller than a plate width of the material 1 to be rolled, they are disposed on a plate width center line of the material 1 to be rolled, and when a current penetration depth is made  $\delta$  (m), a specific resistance of the material 1 to be rolled is made  $\rho$  ( $\Omega$ -m), a magnetic permeability of the material 1 to be rolled is made  $\mu$  (H/m), a heating frequency of the AC power source 4 is made  $f$  (Hz), a circular constant is made  $\pi$ , and a plate thickness of the material 1 to be rolled is made  $tw$  (m), the heating frequency of the AC power source 4 is set to cause the current penetration depth  $\delta$  of expression (1) to satisfy expression (2)

$$\delta = \{\rho/(\mu \cdot f \cdot \pi)\}^{1/2} \quad \dots (1)$$

$$(tw/\delta) < 0.95 \quad \dots (2).$$